

Section 4.3

Exercises, page 273:

4.97 If the study involves random sampling, then we can make inferences about the population from which we sampled. If the study involves random assignment we can make inferences about cause and effect.

4.98 In a well-designed experiment, we can make inferences about cause and effect, but not in an observational study. In either case, we can make inferences about a larger population if the individuals were randomly selected from that population.

4.99 Because this study involved random assignment to the treatments (foster care or institutional care), we can infer that the difference between foster care or institutional care caused the difference in response. However, we should not generalize this result to any larger population because these 136 children were not randomly selected from a larger population.

4.100 Because this study involved random assignment to the treatments (freezer or room temperature), we can infer that being stored in the freezer caused the increase in average charge. Also, because the batteries were randomly chosen from the warehouse, we can generalize this result to the entire population of batteries in the warehouse.

4.101 Because this study did not involve random assignment to a treatment we cannot infer cause and effect. Also, because the individuals were not randomly chosen, we cannot generalize to a larger population.

4.102 Because this study involved a random sample of adults, we can make an inference about the population of adults. It appears that adults who attend religious services regularly have a lower risk of dying. However, because subjects were not randomly assigned to attend religious services (or not), we cannot infer cause and effect. We do not know that attending religious services is the cause of the lower risk.

4.103 Daytime running lights may be effective because they catch the attention of other drivers. As they become more common, they may be less effective at catching the attention of other drivers because people may simply get used to them. Also, the results from a driving simulator might not apply to driving on real roads.

4.104 The psychologist should not generalize to a team of employees that spend months developing a new product that never works right and is abandoned. Students are likely to be in a different place in their lives than employees who are on the job for at least several months and likely much longer. Also, the disappointment associated with losing games during an evening is not likely to be equivalent to the disappointment felt after months of hard work.

4.105 Answers will vary. Possible answers include:

- (a) Many people would consider pricking a finger to be of minimal risk.
- (b) Fewer people would consider drawing blood from an arm to be of minimal risk.
- (c) It is unlikely that very many people would consider inserting a tube into the arm that remains there to be of minimal risk.

4.106 Answers will vary. Possible answers include:

- (a) A non-scientist will be more likely to consider the subjects as people and not be blinded by the scientific results that might be discovered.
- (b) You might consider at least two outside members. A member of the clergy might be chosen because we would expect them to help lead the committee in ethical and moral discussions. You might also choose a patient advocate to speak for the subjects involved.

4.107 Answers will vary. Possible answers include:

- (a) Many would consider this to be an appropriate use of collecting data without participants' knowledge because the data is, in effect, anonymous.
- (b) Many would consider this to be appropriate because the meetings are public and the psychologist is not misleading the participants.
- (c) Most would consider this to be inappropriate because the psychologist is misleading the other participants and attending private meetings.

4.108 Answers will vary. One possible answer is: Any collection of data on minors should be made with parental consent only. This allows the parents to be aware of what is being asked of their children and they can decide if the subject matter is appropriate for their children.

4.109 The responses to the GSS are confidential. The person taking the survey knows who is answering the questions (they were chosen in some random fashion), but will not share the results of individuals with anyone else.

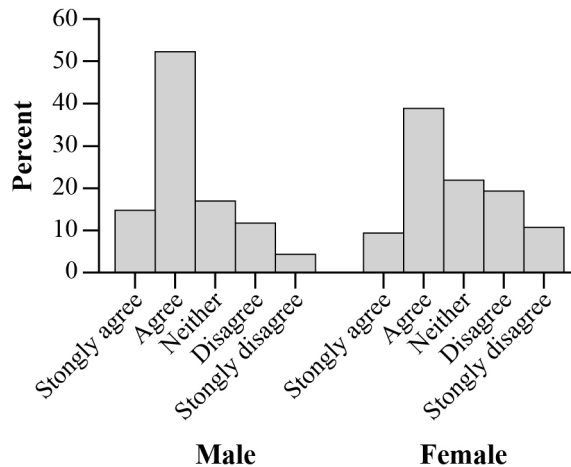
4.110 This describes the anonymous screening. The patient never gives their name, but rather is just assigned a number. No one at the clinic can put the results together with a name because the name was never given.

4.111 In this case the subjects were not able to give informed consent. They did not know what was happening to them and they were not old enough to understand the ramifications in any event.

4.112 Answers will vary. One possible answer is: Yes, providing these potentially life-changing services to some but not all seniors in the study is unethical. We can't withhold important services from some people.

4.113 We will calculate and compare the conditional distributions of response for men alone and women alone. These values are displayed in the table and graph below.

Response	Male	Female
Strongly Agree	$76/516 = 14.7\%$	$59/636 = 9.3\%$
Agree	$270/516 = 52.3\%$	$247/636 = 38.8\%$
Neither	$87/516 = 16.9\%$	$139/636 = 21.9\%$
Disagree	$61/516 = 11.8\%$	$123/636 = 19.3\%$
Strongly Disagree	$22/516 = 4.3\%$	$68/636 = 10.7\%$



From the table and the bar graph we see that men are more likely to view animal testing as justified if it might save human lives: over two-thirds of men agree or strongly agree with this statement, compared to slightly less than half of the women. The percentages who disagree or strongly disagree tell a similar story: 16% of men versus 30% of women.

4.114 This could happen because the median is resistant to outliers while the mean is not. Also, the smallest change in stock price is -100% while there is no upper limit for an increase in stock price. It is likely that there were several companies who were very high outliers that had a big effect on the mean.